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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/752,462	01/05/2004	Darian Muresan	3015P	4905
35690	7590	01/25/2008		
MEYERTONS, HOOD, KIVLIN, KOWERT & GOETZEL, P.C. P.O. BOX 398 AUSTIN, TX 78767-0398			EXAMINER HSU, AMY R	
			ART UNIT 2622	PAPER NUMBER
			MAIL DATE 01/25/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/752,462

Applicant(s)

MURESAN, DARIAN

Examiner

Amy Hsu

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 20-25 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 is/are allowed.
- 6) ☒ Claim(s) 1,2,8,9,14 and 15 is/are rejected.
- 7) ☐ Claim(s) 3-6,10-13,16-19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Newly submitted claims 20-25 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: The original claims are directed towards a method for determining an edge direction by calculating interpolation errors in various directions *for a current missing green pixel* and selecting a direction by the minimum of the error directions, while the newly submitted claims are directed towards determining an edge *direction for a known plurality of pixels* each representing a first, second, or third type pixel by calculating interpolation error for *current known pixels*.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 20-25 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Response to Arguments

Applicant's arguments, filed 10/18/2007, with respect to the rejection(s) of claim(s) 1-19 under 35 USC § 102(e) and 35 USC § 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2,8-9,14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohashi et al. (US 6642960).

Regarding Claim 1, Kohashi teaches a computer-implemented method (*one of ordinary skill in the art recognizes that a defect pixel interpolation algorithm is performed by a computer implemented method*) for determining from a sampled image (*Fig. 18 shows an example*), an edge direction (*Fig. 9 and Col 15 line 10 "edge configuration"*), the method comprising: calculating for a fault pixel, interpolation errors in an East-West (EW) direction at known neighboring pixels, and averaging the EW interpolation errors to obtain an EW error; calculating for the fault pixel, interpolation errors in a North-South (NS) direction at known neighboring pixels, and averaging the

NS interpolation errors to obtain a NS error; and selecting a direction indicated by a minimum of the EW error and the NS error as the edge direction (*Fig. 9 and Col 15 Lines 4-10*). The method is explained for a fault pixel, not specifically a green missing pixel.

Another embodiment of Kohashi in Fig. 18 shows the sample image is from a CFA with each pixel representing R, G, or B. Col 19 Lines 29-35 teaches the a missing green pixel, (*fault pixel G43*) where the edge configuration is determined based on neighboring known green pixels as seen in Fig. 18.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Kohashi to apply the edge configuration determining method to a color pixel array because in a color image, pixels of the same color are placed at every other location and four pixels can be treated as one fault pixel and the pixels can be uniformly compensated.

Regarding Claim 2, Kohashi teaches the method of claim 1 wherein the selected edge direction, the sampled image, which includes a green channel (G) of green pixels, a red channel (R) of red pixels, and a blue channel (B) of blue pixels (*Fig. 16*), are used to interpolate missing green pixels at red and blue locations in the green channel by: for the missing green pixel, interpolating a difference image comprising the G-B if the missing green pixel is in a blue location (*Fig. 20*), or G-R if the missing green pixel is in a red location (*Fig. 19*), in the selected edge direction; in the blue channel, estimating missing blue pixels in green pixel locations using linear interpolation of the blue pixels

in the blue channel in the selected edge direction; and in the red channel, estimating the missing red pixels in blue pixel locations using linear interpolation of the red pixels in the red channel in the selected direction, thereby providing an interpolated full green channel in which all missing green pixels have an interpolated value (*same can be applied to the red and blue channels*).

Claims 8-9 are computer-readable medium of the methods of claims 1-2 and are therefore similarly rejected.

Claims 14-15 are apparatus claims of the methods of claims 1-2 and are similarly rejected.

Allowable Subject Matter

4. Claims 3-6, 10-13, and 16-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. Claim 7 allowed. Examiner has currently not found prior art teaching the detailed method for obtaining corrected high density color channels claimed in Claim 7.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hamilton, Jr. et al. (US 6697107) teaches a method for smoothing a digital color

image having color pixels in which each colored pixel is expressed as one luminance and two chrominance color values.

Tabei (US 5805216) teaches a defective pixel correction circuit corrects a defective pixel in a solid imaging device such as a CCD.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy Hsu whose telephone number is 571-270-3012. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on 571-272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Amy Hsu
Examiner
Art Unit 2622

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ARH 1/22/08

A handwritten signature in black ink, appearing to read 'Lin Ye', with a stylized, cursive script.

LIN YE
SUPERVISORY PATENT EXAMINER